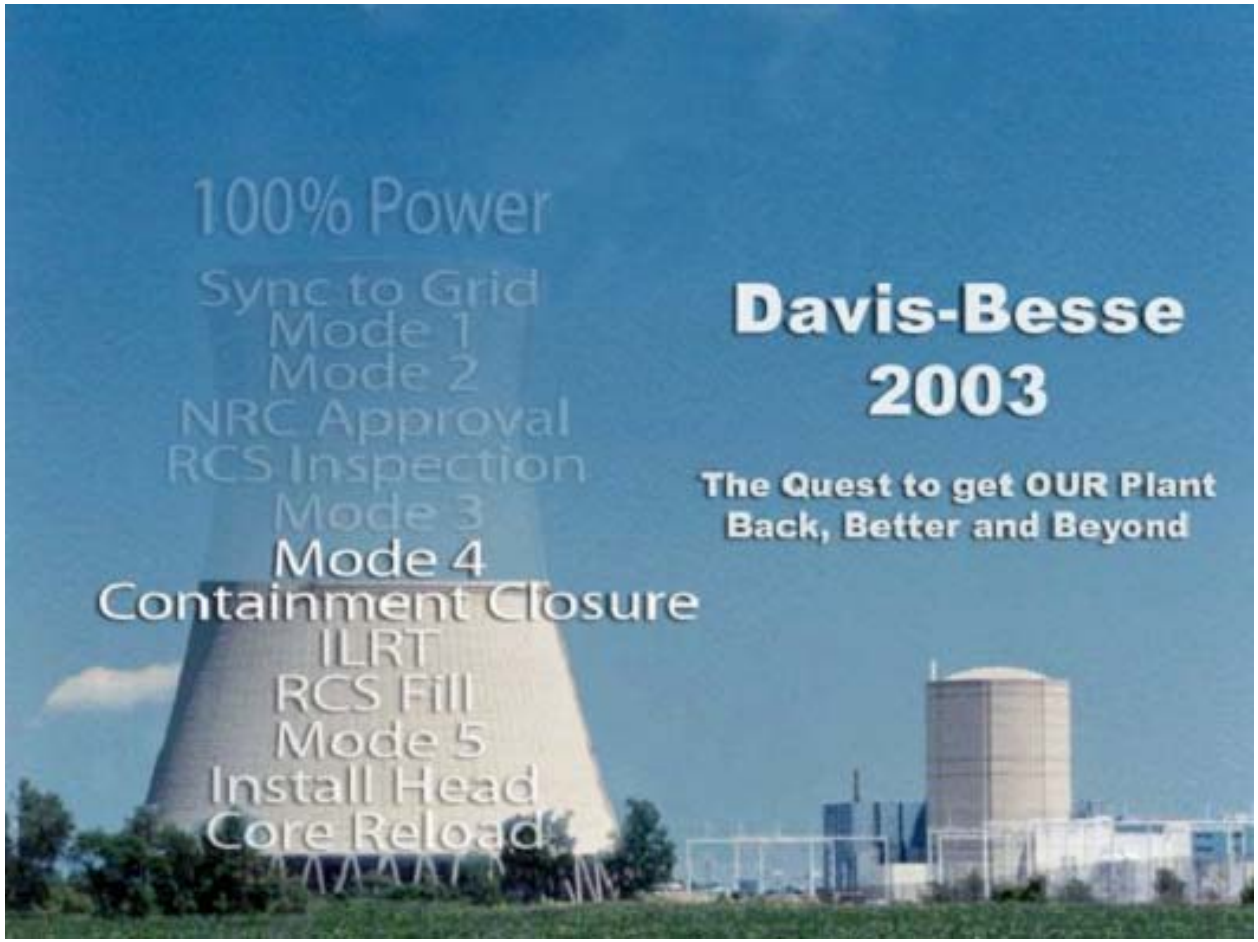
Davis-Besse Nuclear Power Station



IMC 0350 Meeting

Meeting Agenda

- High Pressure Injection Pumps……..……Bob Schrauder
- Electrical Distribution System.....……..……Jim Powers
- Plant Readiness for Mode 4…….……..……..Mark Bezilla
- Operations Start-Up Plan…….……...Rick Dame
- Restart Milestones/Actions..……..……..……...Mark Bezilla
- Safety Culture Assessment Results and Readiness for Mode 4/3…….
  ……...Lew Myers
- Quality Assurance Oversight..……..Steve Loehlein

Lew Myers
Chief Operating Officer - FENOC

High Pressure Injection Pumps

Bob Schrauder

Director - Support Services

Desired Outcome

- Provide you with an understanding of our solution path for the High Pressure Injection Pumps. This solution assures the Davis-Besse HPI pumps will be operable for all conditions

High Pressure Injection Pumps

- Topics
  - Defense-in-Depth Design Solution
  - Project Progress
  - Key Preliminary Test Findings
  - Final Test Loop Criteria
  - Project Completion Plans

High Pressure Injection Pump

High Pressure Injection Pumps

- **Use Defense-in-Depth Approach Increases Safety Margin**
  - Incorporates and improves hydrostatic bearing design qualified by Pump Guinard and used as the standard design in French PWRs
  - Locates bearing supply line on discharge side of impeller to reduce concentration and size of debris reaching hydrostatic bearing
  - Use 50 or 90 mil strainer to protect hydrostatic bearing orifices
  - Includes “escape” grooves in hydrostatic bearing to allow debris to exit pockets and prevent plugging
  - Hardface all critical wear surfaces: wear rings, bushing, hydrostatic bearing

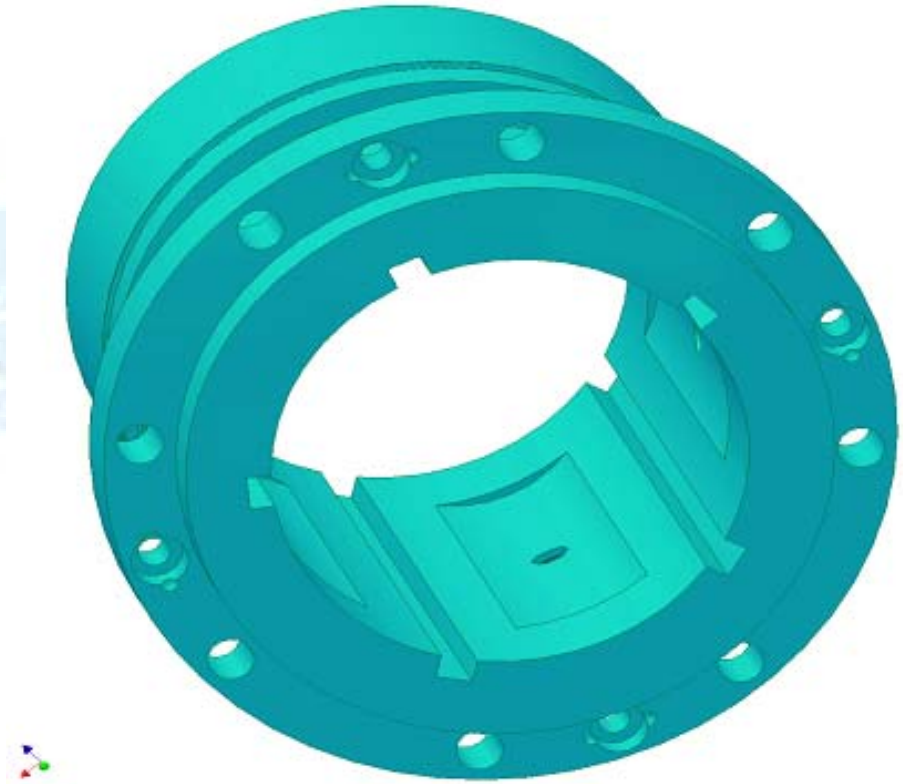
High Pressure Injection Pumps

- Project Progress
  - Modification design concept developed and preliminary verification testing performed
  - Verification testing provided information to finalize design and properly characterize debris loading for qualification testing
  - Currently, optimizing design and finalizing the qualification test criteria

High Pressure Injection Pumps

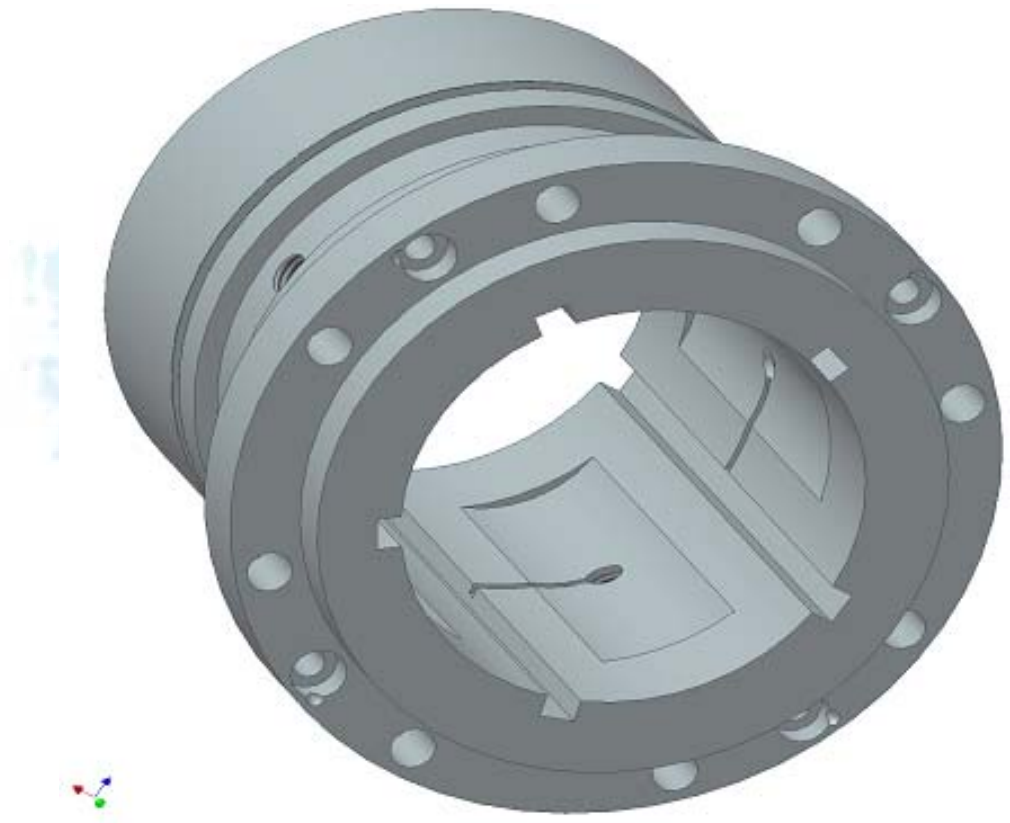
- Preliminary Test Findings
  - Debris larger than hydrostatic bearing clearance can become lodged in bearing pockets, plugging pockets
  - Fibrous material in significant quantities is problematic for tight clearances and strainer performance
  - Unrealistic LBLOCA debris characterization combined with SBLOCA pump flow resulted in excessive debris loading

High Pressure Injection Pumps



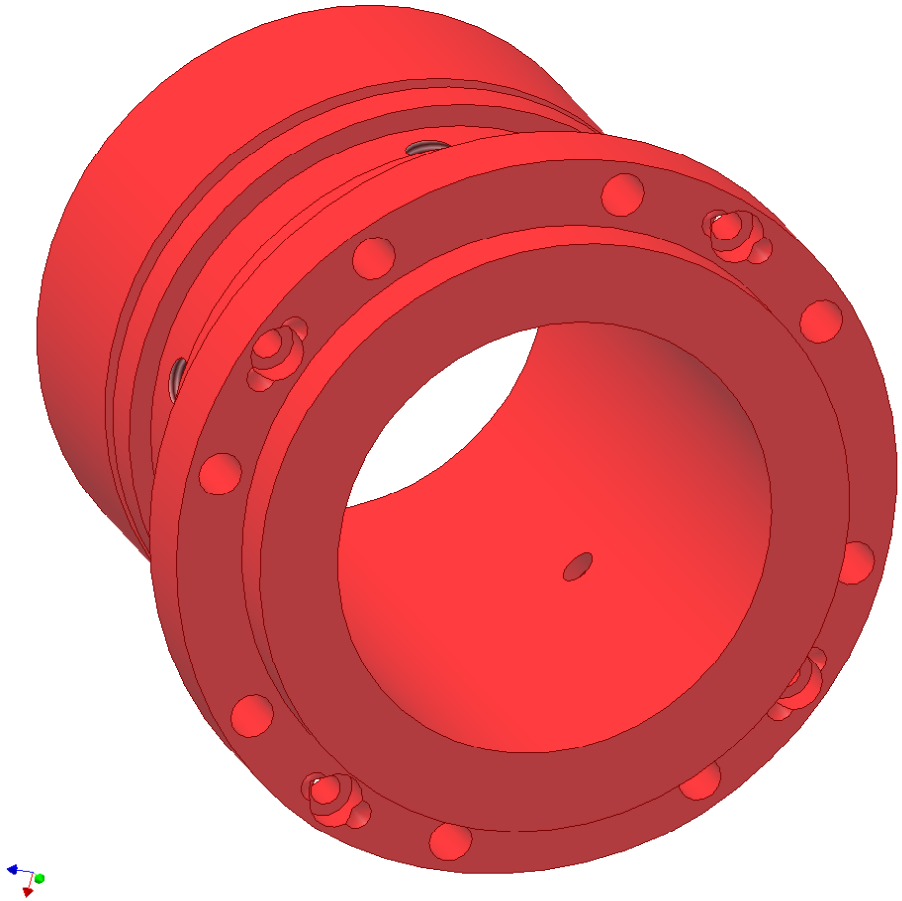
Original Hydrostatic Bearing Unmodified

High Pressure Injection Pumps



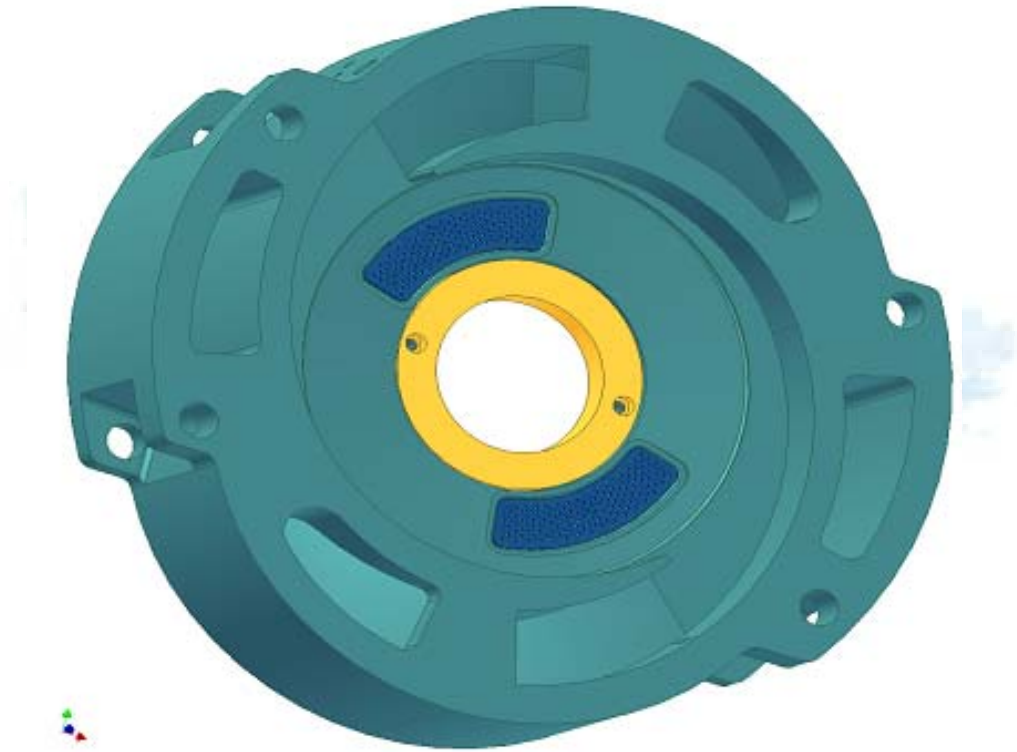
Original Hydrostatic Bearing with Grooves

High Pressure Injection Pumps



Hydrostatic Bearing

High Pressure Injection Pumps



Volute with Strainers on Discharge Side of Impeller

High Pressure Injection Pumps

- Final Qualification Test Criteria
  - Conservative and realistic approach matches pump operation requirements with debris generation conditions
  - Limiting case is long-term operation at boron precipitation control flow rate (250 gpm) following a LBLOCA (i.e., LBLOCA debris)
  - Based on verification test results, nearly all fibrous insulation removed from containment and from test loop
  - Revised debris transport analysis to account for settling of concrete particles in sump and low flow areas

High Pressure Injection Pumps

- Project Completion Plans
  - HPI pumps returned to site unmodified for Normal Operating Pressure test
  - Test loops being modified for qualification testing
  - Qualification test debris characterization being finalized
  - Qualification testing to begin in late August
  - Pump Guinard hydrostatic bearing design being adapted and improved for Davis-Besse HPI pumps
  - Hardfaced replacement parts ordered
  - Final pump modifications to be made following Normal Operating Pressure test

Electrical Distribution System

Jim Powers

Director - Engineering

Electrical Distribution System

- Electrical Transient Analysis Program (ETAP) Results
  - ETAP is a state-of-the-art computer software program used to model the effects of plant transients on the electrical distribution system
  - Results evaluated to ensure electrical distribution system has sufficient capacity and capability to accomplish plant safety functions
- Implement design modifications to improve voltage of essential busses and increase safety margin

Electrical Distribution System

- Operability Evaluation for first Mode 4
  - Use Administrative Controls for Technical Specifications Degraded Voltage Relay Setpoint Change
  - Limit non-essential loads to prevent voltage degradation
  - Require two qualified off-site to on-site circuits to be operable
  - Require grid voltage restrictions

Electrical Distribution System

- Project Status
  - Finalize grid voltage criteria
  - Implement modifications to eliminate restriction on non-essential loads

Plant Readiness for Mode 4/3

Mark Bezilla

Vice President/Plant Manager

Purpose

- Discuss Plant Readiness for Mode 4/3 and introduce the Restart Test Plan Manager responsible for the Start-Up Plan

Plant Readiness for Mode 4/3

- Demonstrated confidence in plant systems and equipment
  - Primary systems
    - Pressurized reactor coolant system
    - Ran reactor coolant pumps
    - Conducted 50 psig (May 6) and 250 psig (May 25) Leak Tests
    - Containment closure (July 3)
  - Secondary systems
    - Exercised Circulating Water, Condensate, Feedwater Systems
    - Established Main Condenser Vacuum
  - Plant modifications
  - Human performance
- Preparation for Mode 4/3 Test

Plant Readiness for Mode 4/3

- Restart Test Plan Manager is Rick Dame
  - Graduate of Ohio State University (B.S. Mechanical Engineering)
  - 18 years nuclear experience (Perry Nuclear Power Plant)
  - Previously Licensed Senior Reactor Operator
  - Experienced in Start-up Testing, System Engineering, Functional Leakage Testing, and ASME Section XI Test Programs
  - Project Manager for RFO Plant Shutdown and Startup Sequences

Operations Start-Up Plan

Rick Dame

Reliability Unit - Supervisor

Operations Start-Up Plan

- Role of Restart Test Plan Manager
  - –Assist Operations Staff in detailing existing "Restart Plan"
  - –Will serve as a direct report to the Operations Manager who is responsible for approval and implementation of the plan
  - –During the organizational readiness assessments, will be a direct report to the FENOC Chief Operating Officer

Operations Start-Up Plan

- Objectives of plan
  - Conduct Plant startup safely and event-free
  - Successfully perform required post-maintenance and modification testing
  - Assess organizational readiness to effectively implement Plant processes when challenged by any emergent issues

Operations Start-Up Plan

- Initial Observations
  - Operations Staff is well-trained, experienced, and competent
  - Innovative simulator training for Plant heat-up has been completed
  - Material condition of Plant is very good
  - Equipment that has been returned to service has performed well

Operations Start-Up Plan

- Conduct Plant start-up safely and event-free
  - Detailed activity plan (Initial Mode 4 to 100 percent power)
  - Operator start-up task assignments and expectations
  - Plan includes 7 day rated pressure/temperature Reactor Coolant System (RCS) Integrity Test
  - All key activities will have dayshift/nightshift owners
  - Engage entire organization in support of Operations
  - 24/7 Management oversight throughout start-up sequence

Operations Start-Up Plan

- Successfully conduct required post-maintenance and modification testing (PMTs)
  - Ownership of retests (Roles and responsibilities of Maintenance/Engineering/Radiation Protection)
    - PMTs assigned with Owner
  - Vigilant monitoring of equipment
  - Contingency plans
  - We will exercise effective operational decision making principles if unexpected results are encountered

Operations Start-Up Plan

- Organizational readiness to effectively implement Plant processes when faced with an emergent issue
  - Employ techniques used at peer stations to improve Plant operational focus/Operations leadership
  - Conduct emergent issue exercises during 7 day RCS Integrity Test (Procedure changes, equipment issues, Significant Root Cause Reports, use of Problem Solving Nuclear Operating Procdure)
  - Assess organizational performance

Restart Milestones/Actions

Mark Bezilla
Vice President/Plant Manager

Restart Milestones/Actions

- Four nozzles removed from original reactor vessel head and sent to Pacific Northwest National Laboratory in Washington (August 2003)

Framatome ANP and NPS Employees Remove Nozzles

Restart Milestones

- Transitioning from Return to Service Plan to normal processes
- Installation of HPI Pumps
- Completing remaining work required for Mode 4/3
- Perform 7 day Full Pressure Test of Reactor Coolant System
- Execute Restart Test Plan
- Return to Mode 5 and assess results

Restart Actions for Mode 4/3

- Items completed to date
  - –62 Modifications
  - –7763 Work Orders
  - –6242 Condition Report Evaluations
  - –6582 Corrective Actions

NRC 0350 Oversight Panel's Restart Checklist

- 31 Checklist Items
  - –16 Complete
  - –5 Restart Actions Complete/Inspection in Progress
  - –3 Waiting Plant Conditions to Complete
  - –6 Restart Actions in Progress
  - –1 Closure of Confirmatory Action Letter

Results of Safety Culture Assessment and Readiness for Mode 4/3

Lew Myers

Chief Operating Officer - FENOC

Safety Culture

That assembly of characteristics and attitudes in organizations and individuals which establishes an overriding priority towards nuclear safety activities and ensures that issues receive the attention warranted by their significance.

Recent Safety Culture Assessment

- In July, Management team completed a two day assessment of Safety Culture in preparation of Mode 4/3
  - Each Safety Culture commitment area was assessed
- Assessment oversight received
  - Independent Industry Experts
  - Company Nuclear Review Board Member
  - Restart Overview Panel Member
  - Quality Assurance

Recent Safety Culture Assessment

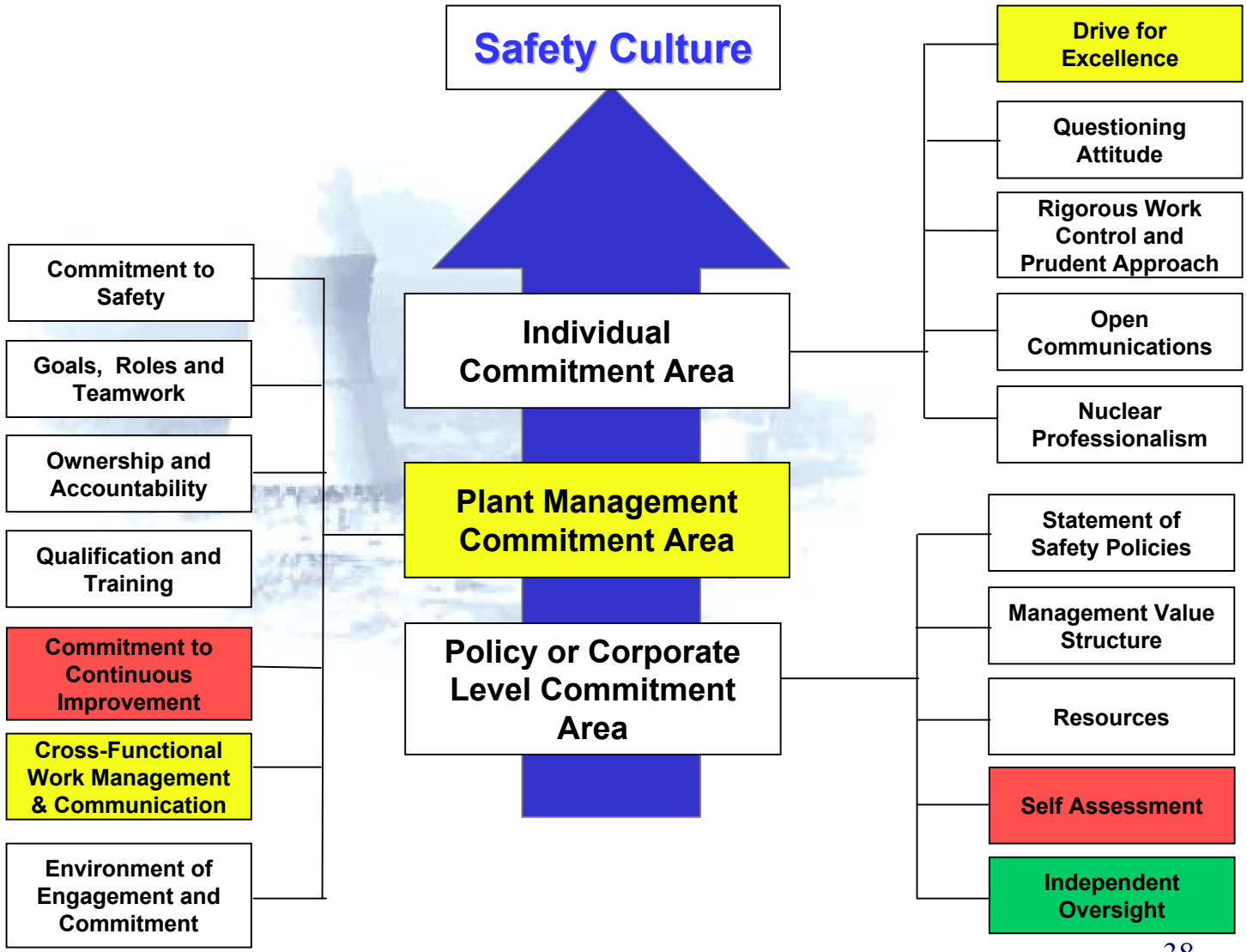
Color Key

All major areas are acceptable with a few minor indicator deviations

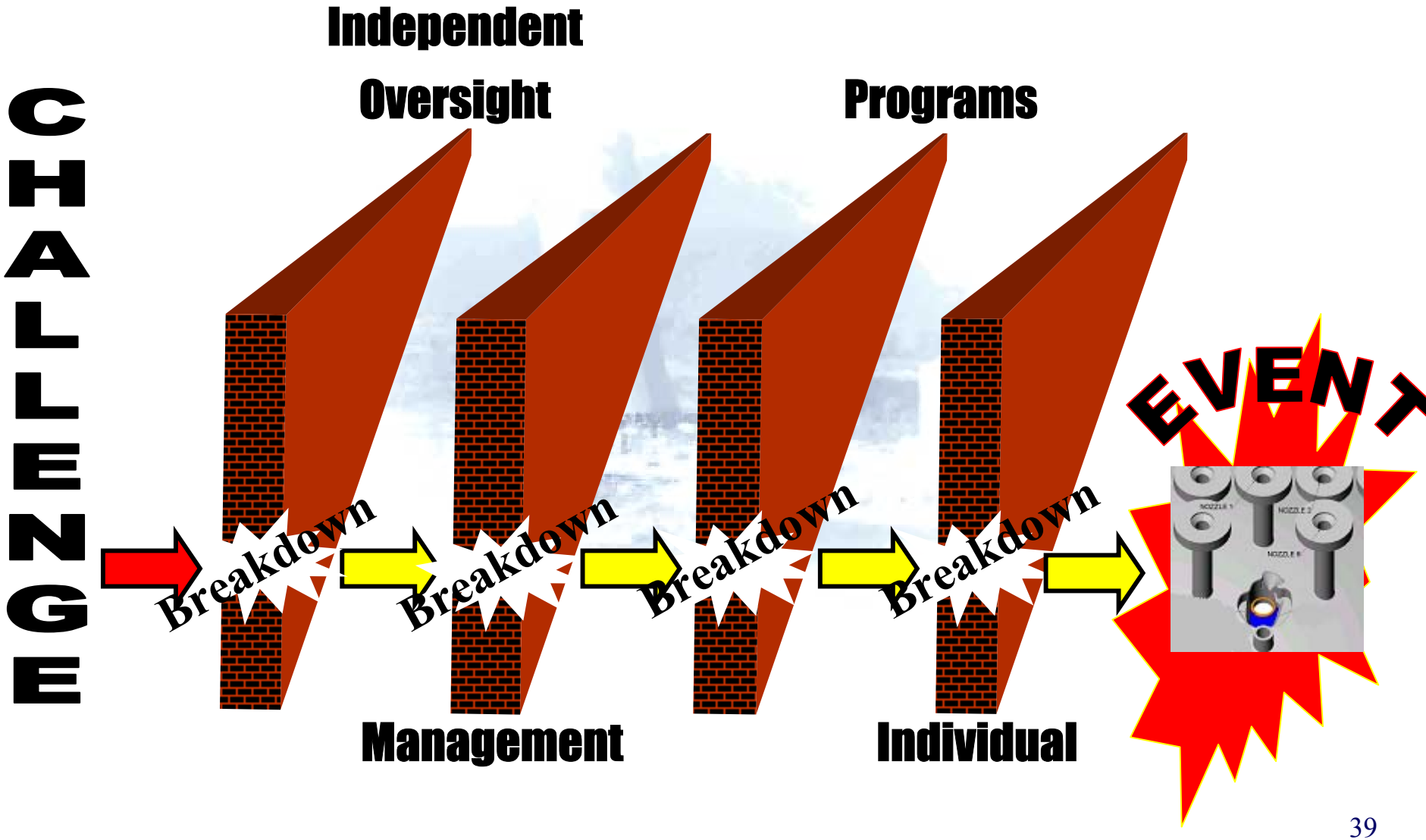
All major areas are acceptable with a few indicators requiring management attention

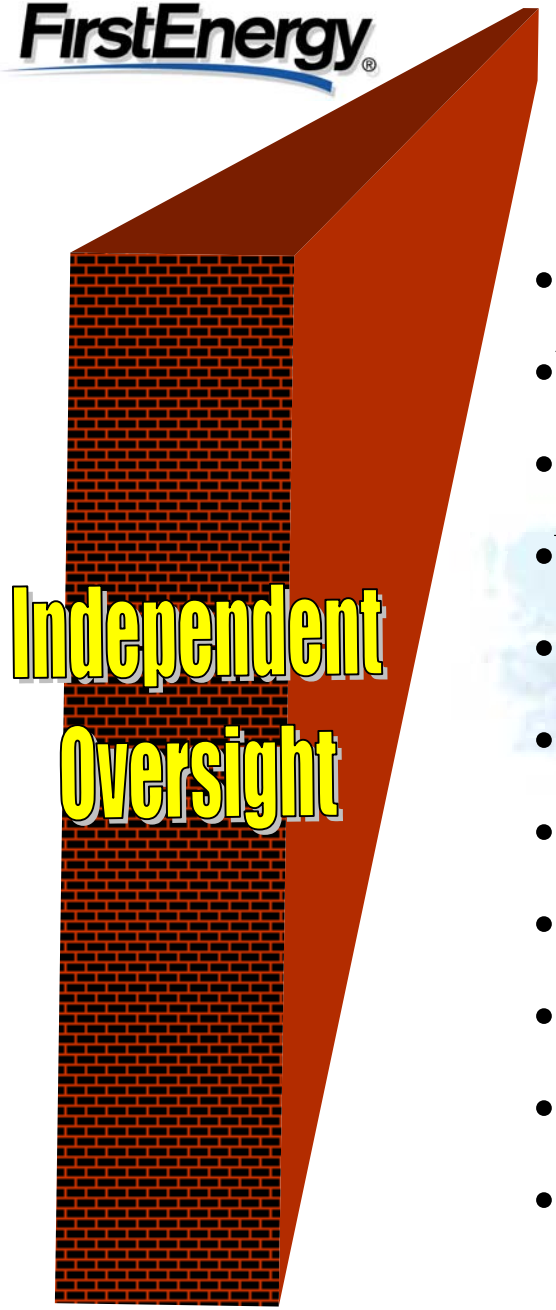
All major areas are acceptable with several indicators requiring prompt management action

Several major areas do not meet acceptable standards and require immediate management action



Barriers to Assure Safety





Accomplishments

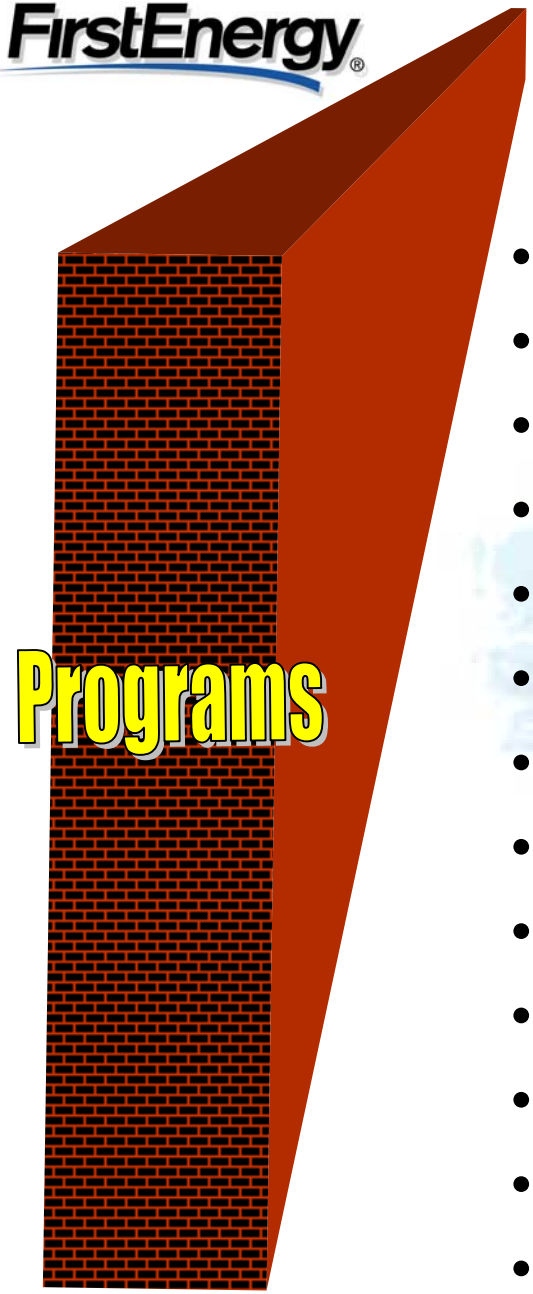
Independent Oversight

- Enhanced Quality Assessment Organization
- Vice President Oversight
- Company Nuclear Review Board Rechartered
- Nuclear Committee of the Board
- Quality Control Realignment
- Safety Conscious Work Environment Program
- Employee Concerns Program
- INPO Assist Visits
- Restart Overview Panel
- Quality Assurance Quarterly Assessment
- Safety Culture Assessment

Accomplishments

Management

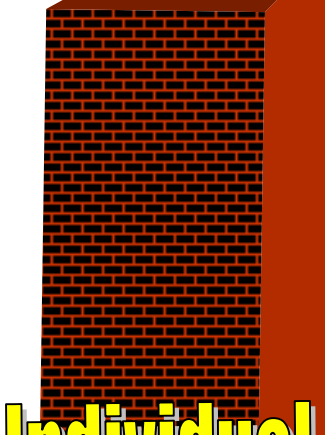
- New Leadership Team
- Management Alignment
- Improved Operational Focus
- Management Observation Program
- Safety Conscious Work Environment Review Team
- Added and Realigned Resources
- Engineering Assessment Board
- Improved Regulatory Affairs Rigor
- Safety Culture Assessment Process
- Elevated Project Review Committee
- Leadership In Action Continuous Training



Accomplishments

Programs

- Operating Experience Program
- Corrective Action Program
- Boric Acid Control Program
- Integrated RCS Leak Rate Program
- In-Service Inspection Program
- Modification Program
- Radiation Protection Program
- Engineering Program Reviews (65)
- On-going Program Review Procedure
- Latent Issues Reviews
- System Health Reviews
- On-line Risk Procedure
- Problem-solving/Decision Making



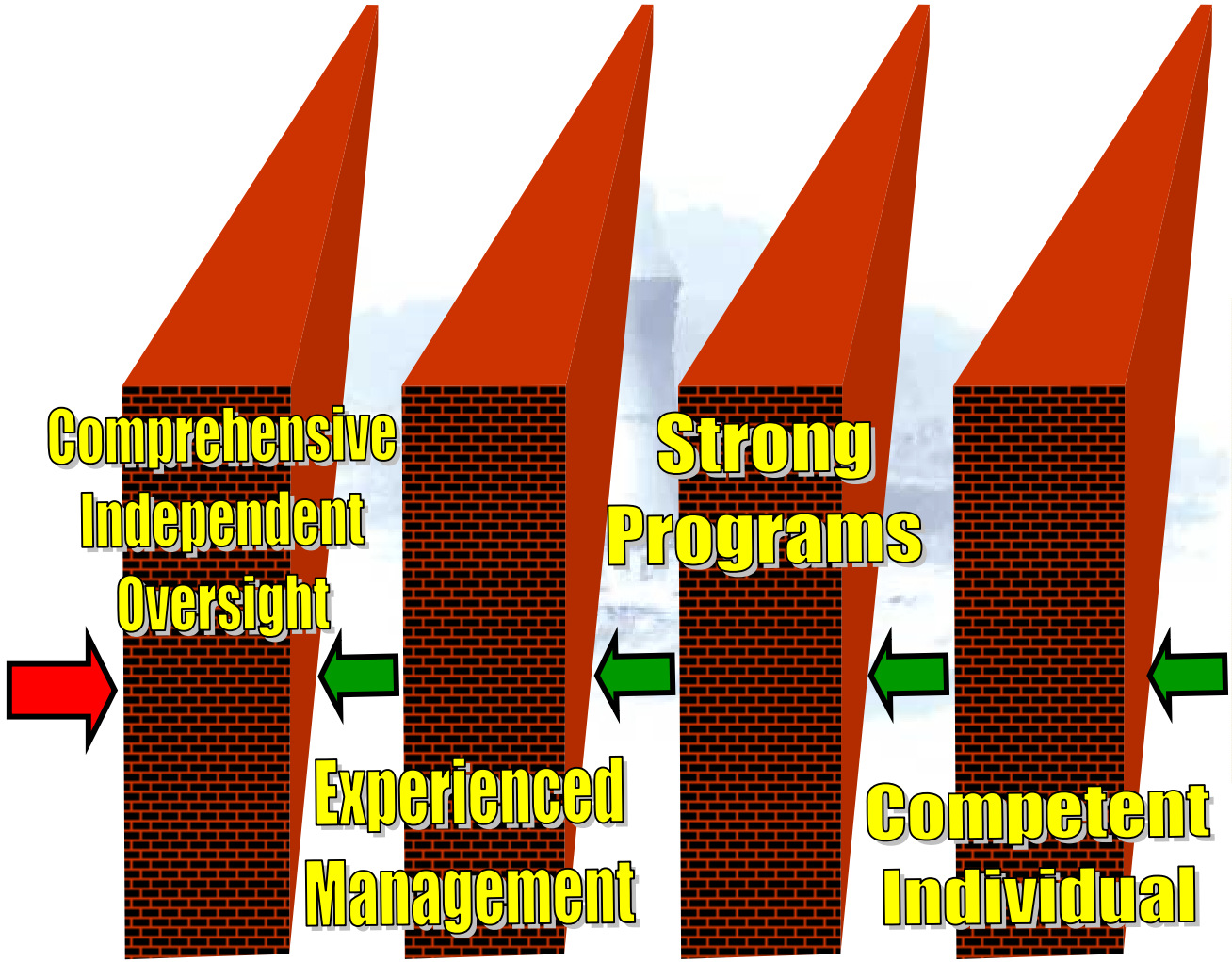
Accomplishments

Individual

- 50.9 Training
- Safety Conscious Work Environment Training
- Operability Evaluation Training
- Corrective Action Program Training
- Root Cause Training
- Ownership for Excellence Development Plans
  - Nuclear Safety
  - Nuclear Professionalism Development
- SRO Training
- Case Study
- Standards / Expectations
- Plant Access Training

Barriers to Assure Safety

FENOC Vision



FENOC Vision:

'People with a strong safety focus delivering top fleet operating performance'

Quality Assurance Oversight

Steve Loehlein

Manager – Nuclear Quality Assessment

Quality Assessments

- Station Readiness
- Quality Assessment Organization Readiness
- Planned Oversight Activities

Station Readiness for Mode 4/3

- Readiness of Systems/Equipment
  - Using Continuous Assessment Process to monitor performance and document concerns
  - Readiness will be established through completion of required restart activities

Station Readiness for Mode 4/3

- Readiness of Corrective Action Program
  - Corrective Action Review
    - 5402 completed Corrective Actions were reviewed
    - 4980 (92%) acceptable
    - 422 (8%) inconclusive/unacceptable
      - Documentation errors (3.8%)
      - Documentation linkage to action not clear (4.2%)
      - Condition Reports (CRs) were issued for these cases
    - Conclusion
      - Pending outcome of new CRs, in general, issues were not lost, but documentation of activities needs improvement

Station Readiness for Mode 4/3

- Focused Assessment of Corrective Action Program
  - Examined program since March, 2003
    - Interviews of managers, analysts, and other personnel
    - Oversight of the Corrective Action Review Board and Management Review Board
    - Sampled CRs for quality of work, and compliance with procedure
    - Sampled rollovers to check that they had been performed correctly

Station Readiness for Mode 4/3

- Conclusions
  - Corrective Action Program is currently Satisfactory in finding and fixing identified problems
  - Trending needs to be effectively implemented for the future
  - Improvement is needed in the use of Performance Indicators
  - Organization needs to continue to emphasize improvement in implementation

Station Readiness for Mode 4/3

- Readiness of Plant Staff
  - Ongoing assessments of safety culture
  - Ongoing assessments of department activities
    - Operations
    - Radiation Protection
    - Engineering
    - Maintenance
    - Training

Quality Assessment Organization Readiness for Mode 4/3

- Organizational Readiness
  - Quality Assurance (QA) has completed corrective actions in response to Root Cause and Detailed Program Review
    - Implemented Organization's Structural Independence
    - Enhanced oversight of QA by Company Nuclear Review Board
    - Responded to weaknesses in Assessment Program and Assessor performance
  - Strong relationship established with Management
    - V.P. - Oversight meets regularly with Board of Directors
    - Site management support of Quality Assessments is evident

Oversight Activities for Mode 4/3

- Assessment Plan for Restart Activities
  - Continue Assessment of Return to Service Plan Activities
    - Adjusting Assessment Activities based on Organization's activities and plant conditions
  - Mode 4 Assessment Activities include:
    - Control Room Activities
    - Field Activities
    - Organizational Response to Emergent Issues
    - Training Activities
    - Oversight of Restart Test Plan Activities

Closing Comments

Lew Myers
Chief Operating Officer - FENOC